

**Before The
Federal Communications Commission
Washington, D.C. 20554**

In the Matter Of)
)
Rural Health Care Support Mechanism) **WC Docket No. 02-60**

**REPLY COMMENTS OF THE CONTINUA HEALTH ALLIANCE
September 23, 2010**

The Continua Health Alliance (Continua) hereby submits these reply comments in response to the Notice of Proposed Rulemaking in the above captioned proceeding.

The Continua Health Alliance (www.continuaalliance.org) is a non-profit, open industry coalition of over 230 healthcare, technology and medical device companies who have joined together in collaboration to improve the quality of health through the use of telehealth, personal connected health, and independent living technologies for what has been termed “eCare” by the Federal Communications Commission and the U.S. Senate.¹ Continua is dedicated to establishing a system of interoperable personal health solutions with the knowledge that extending those solutions into the home fosters independence,

¹ See: FCC National Broadband Plan: Connecting America, released March 16, 2010, at Page 200. See U.S. Senate Special Committee on Aging, Committee Hearing on April 22, 2010 “Aging in Place: The National Broadband Plan and Bringing Health Care Technology Home”
http://aging.senate.gov/hearing_detail.cfm?id=324102&.

empowers individuals and provides the opportunity for truly personalized health, wellness and fitness management.

I. The need for interoperable standards to facilitate development of rural broadband healthcare infrastructure.

In the Rural Health Care Support Mechanism NPRM and the record of filed comments, only passing mention is made of the importance of interoperability.² This is in stark contrast to the Commission's 700MHz Public Safety network proceeding, where full interoperability is recognized as so important to the successful deployment of this taxpayer-supported network that an Emergency Response Interoperability Center (ERIC³) has been established within the FCC to assure interoperability. The Continua Health Alliance, as a long-standing proponent of interoperable health care systems, recommends the Commission assign similar importance to interoperability issues for the Rural Health Care Support program, and give priority to funding applications which demonstrate interoperability.

² See: Joint Comments from Oregon Health Network and the Telehealth Alliance of Oregon at 12, noting, "[The Health Information Exchange] program is building on existing efforts to advance regional and state-level health information exchange while moving toward nationwide interoperability."; Comments of Modern Technologies Group, et. al., at 4, noting, "No matter how a health care provider transforms its internal systems, without interconnection and intrastate and interstate interoperability to other systems, the provider is building "medical records to nowhere."; Comments of Qualcomm at 25, noting, "Medical devices, health sensors and their applications are increasingly relying on wireless functionality and interoperability to transmit raw data, diagnostic health information, critical aspects of care, emergency services and personalized information.; Comments of the Virginia Telehealth Network at 8, noting the importance of "identification and elimination of barriers to implementation of interoperable telehealth resources."; Comments of Iowa Health Systems at 1, noting, "Our integrated group of hospitals and physicians see patients reap the benefits of system interoperability and sharing of health information on a daily basis."

³ See: <http://www.fcc.gov/pshs/eric.html>

In order to include interoperability considerations in the Rural Health Care funding process, a set of guidelines will need to be developed in collaboration with key industry stakeholders and practitioners. This may also include the FDA, HHS, and other agencies, similar to the collaborative effort with the ERIC for a fully interoperable Public Safety network. Continua and its members have developed detailed interoperability guidelines and are thus well-positioned to assist the Commission in developing a set of consensus interoperability guidelines which are appropriate for the Commission's Rural Health Care programs.

Continua members do not seek to delay the implementation of the Rural Health Care Support Mechanism (RHCSM) programs while the interoperability guidelines are being developed. Instead, Continua recommends a separate development and integration period for the interoperability guidelines, which ultimately intersects the active funding programs and becomes an integral part of the funding evaluation process thereafter. This development process could be undertaken as part of the charter of the Rural Health Care working group suggested by the Commission.⁴

There are many aspects to interoperability in a health care ecosystem. At a high level, interoperability can be achieved in the network, device, application, and service elements of a health care ecosystem (note these elements are functionally aligned with the interoperability requirements being developed by the ERIC). The Commission may determine these different elements of interoperability in the health care ecosystem are

⁴ In the NPRM, the Commission asks "whether to create a working group to develop recommendations for the direction of the Rural Health Care Support Mechanism...."

scored or prioritized with different metrics, when evaluating funding applications under RHCSM programs. As an appendix to these comments, we include a white paper⁵ with greater detail describing why it is essential to address interoperability in the health care ecosystem, and the benefits therein.

II. The importance of expanding access to broadband for personal connected health, telehealth and eCare.

Continua uses the term “eCare” to refer to the class of health information technologies that can facilitate any kind of virtual visit or electronic connectivity outside of traditional office visits among patients, family members, and medical professionals. eCare includes personal connected health as well as telehealth. eCare could simply mean secure text messaging between a senior patient and their doctor to change a medication dosage, or an audio chat, or a full video web cam visit as well. It can also mean personal connected health with an in-home or mobile broadband device that can help providers track and trend data like blood pressure and weight fluctuations that seniors and other patients can take by themselves on a regular basis. eCare may also include using connectivity to help patients remember to take a medication, capture a vital sign, or to view customized content sent to them by their doctor to teach them about managing their own disease. eCare is not a substitute for care providers, physicians or clinicians – it is intended to augment and extend the good work of medical professionals by collapsing time and space, making information available to and from patients anywhere, anytime.

⁵ The paper can also be downloaded from http://www.continuaalliance.org/static/cms_workspace/The_Continua_Health_Alliance-_The_Impact_of_a_Personal_Telehealth_Ecosystem.pdf

To realize the quality improvement, improved access, and cost-containment goals in the healthcare reform and reflected in the FCC's National Broadband Plan, our nation must harness the benefits of technologies. This allows patients and care providers to use real-world, remotely collected data to make decisions about their health on a continuous basis, rather than wait until a condition has set in and requiring the patient to urgently schedule an office visit or go to the emergency room. By tracking vital signs and other health data on a more regular basis and sharing it through secure systems, eCare offers many beneficial clinical capabilities:

1. Empowering patients with tools that help them make sense of—and to manage—their own care;
2. Collecting real-world biological and behavioral data and trends on a daily basis with alerts for out-of-norm situations;
3. Facilitating virtual visits with providers, whenever and wherever appropriate, via a range of electronic media;
4. Enabling social networking, awareness, and care support from family and friends who are nearby or distant;
5. Personalizing care plans and educational content for each patient based on their needs, preferences, data, and capabilities; and
6. Triaging precious medical resources to enable the right amount of care to occur in the right place and time.

These current services and future health information technologies will be the key to improving the delivery of clinical services and health care quality, as well as containing healthcare costs. Many studies have shown the value of personal connected health. For example, the New England Healthcare Institute (NEHI) "2008 Research Update, Remote Physiological Monitoring" found that remote patient monitoring resulted in a 60 percent reduction in hospital readmissions compared to standard care and a 50 percent reduction in hospital readmissions compared to disease management programs without monitoring. The same study found that remote patient monitoring has the potential to prevent between 460,000 and 627,000 heart failure related hospital

readmissions each year. Based on this reduction in readmissions, NEHI estimated annual national cost savings of up to \$6.4 billion dollars.

The significant investments in health information technology (HIT) infrastructure made through the American Recovery and Reinvestment Act (ARRA) and health care reform and now proposed for the Health Infrastructure Program and the Health Broadband Services Program are an important starting place for improving our country's capacity to provide high quality and efficient care. Without a national infrastructure—an “electronic highway” for health information—it will be impossible for the United States to deliver quality care to more people at lower costs as the nation ages. **eCare is the next step forward and with home and mobile connections to rural broadband deployment, the federal government moves the system toward enabling the continuum of care.**

While the scope of the RHCSM is limited to health care *providers*, some mechanism for patient-side funding of patients being served by provider-recipients of RHCSM funding could be beneficial to the success and utilization of the RHCSM programs. In particular, health care providers serving low income patients, or patients in high cost (e.g. remote) areas, may suffer from underutilization of their RHCSM-funded resources without such a patient-side funding program. Continua members ask the Commission to evaluate in its final Order, the viability of a linked program of patient-side funding. For example, patient-side funding may be within the scope of the National Broadband Plan recommendation that the Commission re-examine and expand eligibility

in light of recent trends in health care delivery,⁶ or may be within the scope of the secondary use/shared use proposed in the NPRM.⁷ It is also possible that patient-side funding of broadband service is subject to different considerations than patient-side funding of devices (where the device may be considered a hardware asset of a qualified provider-recipient).

By extending broadband devices and connections to individuals through subsidies or integrated connections through hospital and clinic systems as suggested above, access to care can be expanded in rural communities who most lack clinicians to serve these sparsely populated areas. eCare can improve consumers' access to care, particularly in rural areas, by easing logistical burdens and reducing or eliminating the need to travel to a provider's office for routine checkups. In addition, through the use of personal connected health, providers have more information on a timely basis upon which to make medical decisions that can assist in addressing health problems before they become crises.

Many of the most promising ideas for health care delivery innovation depend on eCare services. ACA (Patient Protection and Affordable Care Act) looks to increase the use of e-Care services to provide for future improvement in healthcare delivery. For example, the Independence at Home Demonstration Project, designed to improve care for chronically ill Medicare beneficiaries, defines an "independence at home medical practice" as one that "uses electronic health information systems, remote monitoring, and mobile diagnostic technology." ACA § 3024. Accountable Care Organizations

⁶ National Broadband Plan at 216 (Recommendation 10.8)

⁷ NPRM at 30.

participating in shared savings programs under ACA are required to “define processes to promote evidence-based medicine and patient engagement, report on quality and cost measures, and coordinate care, such as through the use of telehealth, personal connected health, and other such enabling technologies.” ACA § 3022. Further, the Center for Medicare and Medicaid Innovation created by PPACA may test models that support care coordination through “a health information technology-enabled provider network that includes care coordinators, a chronic disease registry, and home telehealth technology,” and may consider whether a model under review “utilizes technology, such as electronic health records and patient-based remote monitoring systems, to coordinate care over time and across settings.” To ensure the ACA provisions are available to rural patients, it is essential that broadband devices and services are accessible for patients beyond the walls of an institution.

We look forward to working with the FCC to improve healthcare services to all patients including those located in rural communities.

Respectfully submitted,

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APPENDIX: Continua: The Impact of a Personal Telehealth Ecosystem

Continua: The Impact of a Personal Telehealth Ecosystem

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Abstract

The Continua Health Alliance is nearing the first release of its Design Guidelines, an important milestone towards the establishment of a personal telehealth ecosystem. These guidelines address the technical barrier for a personal telehealth ecosystem: interoperability amongst multivendor systems. This paper describes why it is essential to address interoperability, regulatory aspects of multi-vendor systems and reimbursement for establishment of a personal telehealth ecosystem. In addition we elaborate on the impact that Continua has on the development of the personal telehealth domain. First we motivate why the establishment of such an ecosystem is an essential part in addressing the healthcare challenges in society.

1. Introduction

In 2006 the cost for healthcare in the United States rose to \$2.1 trillion or 16 percent of the gross domestic product (GDP) [1]. This correlates with the fact of an aging population and an increase of chronic diseases, which account for more than 75% of the total US healthcare costs [2]. Considering diabetes as an example, it is expected that the prevalence of diabetes in the US increases by more than 70% until the year 2030 compared to 2000 [3], which is alarming. This effect is to a large extent due to the aging society and a more sedentary lifestyle as the population growth rate in the US is estimated to be clearly lower [3]. However, this development is not restricted to the US but is a worldwide problem that both developed and developing countries are facing [3]. Hence, a major challenge in healthcare is to more efficiently provide high-quality care for an increasing number of patients using limited financial and human resources.

Personal telehealth systems, including remote patient monitoring and management, are increasingly recognized as having the potential to help addressing that resource challenge. In personal telehealth systems

the caregiver is geographically separated from the care consumer with the care plan being individually tailored to the patient's needs. This patient-centered concept of bringing the care from the hospital to the patient at home is expected to result in cost-reduction and improved quality of life as is depicted in Figure 1. Through daily automated, but personalized, patient intervention, the care providers can optimize the patient's medication and treatment and more efficiently manage a larger group of chronic disease patients.

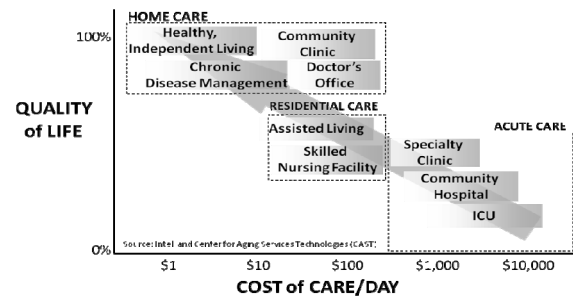


Figure 1: Reducing costs and improving quality of life

However, while personal telehealth systems offer many potential benefits, there are a number of challenges that have to be overcome to support larger scale growth. These include technical issues (e.g. interoperability, reliability, privacy, security, etc.) as well as legal and regulatory issues (e.g. liability), and financial issues (e.g. reimbursement, who pays).

Many sophisticated, but isolated and proprietary solutions exist today. These proprietary solutions lack interoperability, and hence prevent that the mentioned issues are solved in a unified, standardized and cost-effective way. Without interoperability it is not possible to combine the health data that a person gathers with various telehealth devices and services. Thus part of the opportunity to fully use this data for improving the health of the person is lost.

2. The Need for Interoperability in Personal Telehealth

The personal telehealth domain is broad and complex. It can be categorized in three sections; disease management for patients with chronic conditions, health & fitness for consumers that want to stay fit and aging independently to support elderly in living comfortably in their own home. In order to provide solutions for each of these categories, but also to support interaction between systems in different categories, companies in this space have been working together. This allows each company to focus on its core competencies while relying on the expertise of others for complementary competencies.

A good example of cooperation can be found in the measurement devices used in telehealth systems. In order to support a wide range of diseases it is necessary for such a system to work with a large variety of measurement devices, such as blood pressure monitors, weighing scales, glucose meters, pulse oximeters, ECG monitors, peak flow meters, etc. For each of these measurement device types there are a number of companies making them, but none of the companies makes all of these devices. So a telehealth system vendor will need to work with different suppliers to provide a complete set of measurement devices to its customers.

Today, each of these devices from each of these vendors communicates in a different way. Even if some devices use the same transport mechanism, such as Bluetooth, USB, Infrared or a serial cable, each of them will still use a different way of transmitting the data over that transport mechanism. It becomes clear very quickly that it is a daunting task for a telehealth system vendor to make its system work with all of these different devices from different vendors.

Another example of need for cooperation is the integration of personal telehealth data into electronic and personal health records (EHR/PHR). Often the supplier of a telehealth system is not the supplier of the EHR or PHR system that is used to store health data about the patient. Since there were no proper standards in place yet to transfer health data from a telehealth system into an EHR or PHR system, the telehealth vendor had to work with all major EHR/PHR providers to develop custom interfaces for transferring this data. Again a huge amount of work that created a significant barrier for proper integration of telehealth data into EHR/PHR systems and thus limiting the potential health benefits and efficiency improvements that personal telehealth could offer.

3. The Continua Health Alliance

In 2006 Philips was one of the founding members of the Continua Health Alliance; an organization comprised of technology, medical device and health care industry leaders dedicated to making personal telehealth a reality [4]. Currently the Alliance consists of over 150 member companies all working together towards the same goal of improving healthcare worldwide by establishing a system of interoperable personal telehealth solutions that fosters independence and empowers people and organizations to better manage health and wellness.

The examples described in section 2 focused on the technical barriers. However it is important to understand that taking down the technical barriers is only the first step towards unlocking the true potential for growth of the personal telehealth market, as there are also other barriers. The main barriers that restrain the growth of the personal telehealth market identified by Continua are:

1. Technical; the lack of interoperable telehealth standards and equipment.
2. Regulatory; current safety regulations hamper the creation of multi-vendor solutions.
3. Financial; economic value (Return on Investment) of personal telehealth has proven difficult to demonstrate in a scientifically sound way, which restrains the adjustment of reimbursement models that support personal telehealth.

If the regulatory and financial barriers are left in place, the personal telehealth market will keep facing large restraints. Therefore the Continua Health Alliance is actively pursuing solutions to all three barriers:

1. Technical solution; design guidelines to support interoperable sensors, platforms and services and a logo & certification program to signify the promise of interoperability to the customer.
2. Regulatory solution; work with regulatory agencies to safely and effectively manage diverse vendor solutions.
3. Financial solution; work with leaders in the healthcare industries to develop new ways of addressing the costs of providing personal telehealth systems, such as new reimbursement models and co-pay solutions.

4. Design Guidelines

For the past two years the Continua Health Alliance has been working towards the development of the Version One Design Guidelines. At the basis of these guidelines lie the use cases that were submitted by the Continua members. The use cases describe the functionality that a personal telehealth system should deliver and what different components a personal telehealth system consists of.

These use cases were then analyzed to identify the interoperability needs. Since Continua only focuses on the interoperability aspect and not prescribes specific functionality, the interest for Continua lies in the connections between the different components of a personal telehealth system. Figure 2 shows the Continua Reference Architecture [5] that contains the type of components of a personal telehealth system and how they are connected.

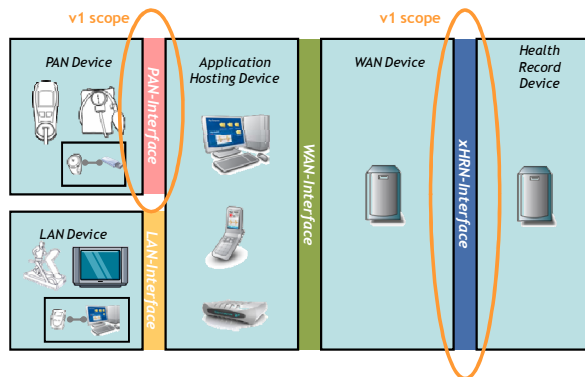


Figure 2: Continua Reference Architecture

For the first version of the design guidelines Continua focuses on the Personal Area Network (PAN) interface and the Electronic/Personal Health Record Network (xHRN) interface. This first selection was made to demonstrate workable results in a limited amount of time and to focus the effort of the organization on the highest priority interfaces first.

4.1. PAN Interface

The PAN interface describes the connection between PAN devices, such as sensors and actuators, and Application Hosting Devices (AHD), such as mobile phones, PDAs, computers and set-top boxes.

Continua has selected standards for two different levels of the PAN interface; the transport level and the data level. For the transport level Continua has selected Bluetooth Health Device Profile [6] for wireless communication and USB Personal Healthcare Devices [7] for wired communication. Above the transport level

is the data level. Continua has selected the ISO/IEEE 11073 Personal Health Device family of standards [8] to enable data format interoperability.

To ensure interoperability Continua has created guidelines that reference these standards and remove optionality. In the first version of the guidelines Continua supports the following list of personal health devices: weighing scale, blood pressure monitor, glucose meter, pulse oximeter, thermometer, strength fitness, cardiovascular fitness and the aging independently activity hub.

The first version of the Continua guidelines enables technical interoperability between PAN devices and Application Hosting Devices of different vendors. Many of these devices need to work within the existing regulated scenarios, meaning that depending on the intended use of a particular set of devices there needs to be evidence that this particular set is a safe and effective way to work within the intended use. Regulatory aspects are not covered by the design guidelines and are left for the system integrator at this point. The Continua regulatory working group is working with regulatory agencies such as the FDA on how to address regulatory aspects in an ecosystem as envisioned by Continua.

4.2. xHRN Interface

The xHRN interface describes the connection between back-end services (Wide Area Network (WAN) Devices), such as weight loss services and disease management services, and electronic/personal health records (Health Record Devices). These back-end services are often under control of different companies and focus on a specific part of the personal healthcare needs of an individual. Electronic health records hold the promise of offering a broad overview of a person's health status in a central location.

Traditionally electronic health records come from the hospital domain where doctors have an electronic repository of the health data of their patients. The patients didn't necessarily get access, let alone control over the data that was gathered and stored about them. A current trend is to allow patients access to their data stored in electronic health records through so called patient portals. At the same time there is significant attention for initiatives like Microsoft HealthVault, Google Health and many others that allow patients to gather and store their own health data and have full control over their data. These systems are often referred to as personal health records (PHR) or PHR platforms.

Continua believes there is merit in both electronic health records and personal health records and deems it

important to be able to share health data available in personal telehealth back-end services with EHR and PHR systems. The xHRN interface enables exactly that.

Continua has selected the Integrating the Healthcare Enterprise (IHE) Cross-Enterprise Document Reliable Interchange (XDR) profile [9] as means to establish the communication between WAN devices and xHR systems. On top of this profile the Health Level 7 (HL7) Personal Health Monitoring (PHM) Report document format [10] was chosen to ensure consistent data encoding.

The guidelines for the xHRN interface now enable people using various personal telehealth systems to share that data with their own personal health record or the electronic health record under control of their doctor and get a broader and hopefully better overview of their health status, with the goal of supporting improvements in the medical care for these people.

5. Impact

A significant result of the work of Continua is the impact it will have on individuals, organizations and society as a whole. The full impact depends on the successful adoption by the market and possible changes in regulation and reimbursement, but there are a number of ways Continua can be expected to impact the world.

5.1. Cost Reduction

The market for personal telehealth systems is still relatively small and very scattered. The number of devices that individual companies produce in this area are limited. Based on these small volumes companies are not able to benefit from significant economies of scale. This holds for the devices itself as well as the components used to manufacture the devices.

Almost each company will develop a considerable amount of communication functionality for those devices in-house. This includes defining the data protocol, selecting or developing the physical connectivity means and integrating it into their various devices.

This results in many companies doing the same work in-house without the benefit of learning from others and economies of scale. Through the design guidelines of Continua and the standards that have been selected a lot of the connectivity design work has been done already. This means that individual companies can implement the guidelines in their device once and then work with different devices from various

companies without the need to adjust their device for every company that it needs to work with.

Already 3rd party companies are building components that incorporate all needed functionality to communicate according to the Continua guidelines [11]. This basically enables telehealth companies to take their existing devices, integrate such a component and have a Continua certified device with the appropriate communication means. This allows all companies to benefit from the economies of scale that the 3rd party company can achieve and thus reduce their costs.

The usage of Continua guidelines can reduce the development cost specifically when multiple devices need to be supported. Assume a mobile phone needs to support four different sensors in order to offer a health service. Development of the mobile phone would be simplified significantly when all four sensors use the same communication transport and data protocol.

5.2. Increased Competition

In the proprietary model each system integrator had to work with all of their suppliers and customers individually to create a proper telehealth system. This created a significant entry barrier for small and medium enterprises to jump into the personal telehealth domain. With the Continua design guidelines it will become easier for new entrants to play in this market, use existing products that are Continua compliant and focus on their own specific area of expertise. The reduction of the entry barrier and the entry of new players will result in increased competition. This means it will become increasingly important for each company to highlight their distinguishing features compared to their competitors.

The Continua guidelines will not only increase competition by the entry of new players, but also by more competition of existing players. In the current model a telehealth integrator selects a number of companies to work with, e.g. to buy sensors from a specific company. The integrator then implements his telehealth system to be able to communicate with these specific devices. Once the implementation is complete there will be significant switching costs if an integrator decides to work with a different sensor manufacturer as the software and possibly the hardware of his system needs to be adjusted. The current regulations enforce this even further as the whole systems needs to go through another round of regulatory approval if one of the sensors is changed for another brand or model.

When an integrator now implements the Continua guidelines he will be able, without significant adjustments in the hardware or software, to switch

from one sensor supplier to another, if these sensor suppliers also implement the guidelines. Current regulations still form a switching barrier, but once these regulations are adjusted to more easily allow the use of different sensors, the switching costs will be significantly reduced. Thus creating more competition between the different suppliers of a telehealth system.

More competition is likely to put the price of the various telehealth components under pressure and reduce the margins for all players. The sensor manufacturers and system integrators in this domain will have to reconsider their strengths carefully and focus their efforts around the areas where they add most value. This triggers questions like: “Are we a device or service company?”, “Should we make all components in-house or only a limited set?”, etc.

5.3. Market Growth

The previous two effects will cause the prices of telehealth equipment to go down. One of the restraints of telehealth is currently the high price of telehealth equipment, thus it can be expected that by the reduction of the price the adoption of telehealth will grow.

Next to the current high price of telehealth equipment, purchasers of telehealth equipment (such as home health agencies and disease management organizations) were also afraid of vendor lock-in, which is a significant issue in the proprietary model and creates high switching costs for telehealth purchasers. For some purchasers this has been a reason to postpone the purchase of telehealth equipment.

So interoperability will not only enable market growth through lowered price, but also by lowering the fear of vendor lock-in and thus support more investments in this technology.

Market growth was one of the key reasons to form the Continua Health Alliance. For vendors of telehealth equipment market growth will offset the loss of income by the reduction of the margin, changing the market from low volume/high margin to higher volume/lower margin.

5.4. More Choice

Consumers will benefit from interoperability by lower prices for out-of-pocket services and equipment and more choice. Although for the real benefit of more choice the changes in regulatory policy will first need to take place. Currently most personal telehealth systems only work with a rather limited set of measurement devices as described earlier. This means that in most cases a person that is prescribed a

telehealth system or goes out to acquire one out-of-pocket does not have much choice in the combination of the telehealth equipment; it is often a single version package deal.

It is likely that in the future a person will have much more say about which kind of devices will be used in a telehealth system. If this person prefers weighing scales from brand *A*, glucometers from brand *B* and mobile phones from brand *C*, than if all of these devices are Continua compliant and meet the necessary quality levels for the intended use of the system, it should be possible for this person to use these devices in his telehealth system. As said it will definitely take time for this change to happen, but it is clearly moving in that direction.

5.5. Better Healthcare

In the end all of the work in Continua would be pointless if it wouldn't result in better healthcare for individuals and society. Continua believes that by using technology, better care can be provided at lower costs. In many countries around the world the current healthcare model is organized around treatment, which is not optimal for a population's health status and is not the most effective way to spend money on healthcare. The future of healthcare has a much higher focus on prevention. Keeping people as healthy as possible, given their circumstances and preventing unnecessary episodes of treatment.

Personal telehealth is an important step towards keeping the healthcare system sustainable; as such personal telehealth is one of the pillars of the future of healthcare. The impact of the Continua Health Alliance lies in making personal telehealth available to a broader audience by lowering the price, growing the market and improving the choice for people around the world.

6. Implementation

The Continua version one design guidelines will be completed and released at the end of 2008. Together with these guidelines a test and certification program is being developed to certify products and services that adhere to the guidelines. These certified products and services are then allowed to use the Continua logo to show that they are truly interoperable.

Many companies are already building products and services that implement the guidelines. To facilitate their testing Continua organizes so called “plugfests”; at these occasions different companies connect their prototypes and test if they are interoperable.

Continua also started to host public demonstrations at the quarterly summits. These demonstrations show to the world which companies are actively implementing the Continua guidelines and help to promote the Continua work by making the results tangible. At the first public Continua demonstration in October 2008 pre-certified products and services were shown by A&D Medical, Cambridge Consultants, Cypak, FitLinxx, Google Health™, IBM, Intel, National Health Service (NHS), Nonin Medical, Oracle, Partners, Philips, Roche Diagnostics, and University Health Network. The first certified products and services are expected early 2009.

7. Conclusions and Discussion

The Continua Health alliance is a significant force in the development of the personal telehealth domain and the first version of the design guidelines is an important step to support the growth of this field. However this is only a first step of a long journey. Many technical and non-technical challenges still exist that need to be addressed.

On the technical side Continua has already solicited input for new use cases and the technical implementation of those use cases is now ramping up. This includes addressing interfaces that were out of scope of V1 (see Figure 2) and extending the set of measurement devices that were supported in V1. A key factor for Continua is backwards compatibility to ensure interoperability between devices that implement different versions of the guidelines. At the same time discussions about regulatory changes and new reimbursement models are still ongoing.

The world around Continua also keeps changing. Over the past year we have seen the rise of personal health record infrastructures with new initiatives in the form of Microsoft HealthVault and Google Health. Microsoft and Google are addressing another part of the technical challenge of personal healthcare by focusing on the storage of, access to and control over personal health data. This is complementary to the interoperability that the Continua Health Alliance is striving for. Integrating the Continua enabled interoperability in Microsoft HealthVault and Google Health will allow the easy integration of data from any Continua certified measurement device into these PHR platforms.

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